

*Observations of Comet II. 1894 (Gale).* By W. E. Plummer, M.A.

The following observations of Gale's Comet have been made with the equatorial of the Liverpool Observatory. When the comet was sufficiently bright to admit of any illumination in the field the observations were made with a filar micrometer. The remainder, marked "Ret," have been made by a micrometer of thick wires crossed at right angles, and placed at an angle of  $45^\circ$  with the meridian. Five transits have usually been made when this micrometer has been used. All the observations have been corrected for differences of refraction, but no corrections for parallax have been applied. In the column "Observer," the letters "P." and "S." refer to Mr. Plummer and Mr. Skinner, respectively:—

	Liverpool Mean Time of Observation.			No. of Comparisons (a),	Apparent R.A. of $\varpi$ .	Declination.	No. of Comparisons ( $\delta$ ),	Apparent Declination of $\varpi$ .	Log Factor in ( $\alpha$ ),	Log Factor in ( $\delta$ ),	Observer.	Star of Reference.		
1894														
May	4	8	37	2	+ 8 58.51	13	8 28 17.01	+ 10 9.7	3	- 3 14 19.6	0.8617	P.	a	
					+ 7 53.97	13	8 28 16.30	+ 19 25.1	3	- 3 14 16.4	...	P.	b	
7	9	34	11	+	22.60	16	8 27 59.99	+ 15 58.5	4	+ 7 29 58.3	0.4629	0.8204	P.	c
9	10	2	58	+ 1	0.02	16	9 15 2.56	+ 1 5.5	4	+ 13 23 19.5	0.4932	0.7966	P.	d
					- 29.66	16	9 15 2.64	- 10 33.0	4	+ 13 23 17.4	...	...	e	
10	9	53	37	-	49.33	12	9 22 44.36	+ 5 17.4	3	+ 15 55 24.2	9.4846	0.7781	P.	f
10	7	49	-	44.84	12	9 22 48.85	+ 6 44.9	3	+ 15 56 5.7	9.5013	0.7883	S.	f	
12	11	13	46	+	39.21	16	9 37 19.20	+ 1 14.7	4	+ 20 28 18.3	9.5600	0.7883	P.	g
11	20	47	-	6.26	12	9 37 21.32	- 11 47.1	3	+ 20 28 55.0	9.5634	0.7922	P.	h	
16	10	35	22	+ 1	44.19	16	10 1 14.16	+ 4 57.0	4	+ 27 5 20.7	9.5480	0.7168	P.	i
				- 37.88	16	10 1 14.52	- 5 52.9	4	+ 27 5 21.3	...	...	P.	j	

	Liverpool Mean Time of Observation.			No. of Comparisons (a).	Apparent R.A. of $\delta$ .	Dec. $\delta$ -* R.A. of $\delta$ .	No. of Comparisons (b).	Apparent Declination of $\delta$ .	Declination of $\delta$ -*.	Log Factor of Parallax in (a).	Log Factor of Parallax in (b).	Observer.	Star of Reference.	
1894.	h	m	s	m	s	m	s	h	m	h	m	h	k	
May 17	9	38	40	+ 43°51'	12	10	6	18	62	-	58°4	3	P.	
	9	45	52	+ 45°05'	12	10	6	20	16	-	35°8	3	P.	
18	10	26	5	- 3 10°80	20	10	11	29	72	+ 6 40°4	5	+ 28 21 28°1	9 4898	S.
	10	35	55	- 3 8°87	20	10	11	31	65	+ 7 11°2	5	+ 29 35 15°7	9 5464	P.
21	9	45	59	+ 1 43°28	Ref.	10	25	6	73	+ 1 6°6	Ret.	+ 32 34 6°4	9 5566	S.
	...	- 1	24°22	"		10	25	6	59	+ 3 52°6	"	+ 32 34 5°9	0 6651	P.
21	9	59	3	+ 1 45°64	"	10	25	9	09	+ 1 33°8	"	+ 32 34 33°6	0 6860	P.
	...	- 1	21°69	"		10	25	9	12	+ 4 20°0	"	+ 32 34 33°3	0 6948	P.
24	10	12	30	- 22°58	20	10	37	11	82	- 9 31°9	5	+ 34 54 30°7	0 6929	P.
	...	+	1	7°00	20	10	37	11	94	- 9 37°1	5	+ 34 54 32°1	0 6946	P.
27	12	2	5	- 49°25	16	10	48	9	36	+ 2 47°4	4	+ 36 46 2°4	0 6410	P.
28	10	12	35	+ 2 22°93	16	10	51	12	86	- 5 0°3	4	+ 37 14 33°0	0 6956	P.
	10	28	42	+ 2 24°06	16	10	51	14	89	- 4 39°1	4	+ 37 14 54°2	0 6128	S.
29	11	6	34	- 1 44°04	20	10	54	32	52	+ 11 5°7	5	+ 37 44 18°9	0 6542	P.
	...	+ 3	28°12	20		10	54	32	66	- 14°0	5	+ 37 44 19°7	0 6371	S.
30	10	55	28	+ 3 57°05	16	10	57	37	02	- 2 41°6	4	+ 38 10 32°5	0 5534	P.
	...	- 3	25°77	16		10	57	36	85	- 10 2°2	4	+ 38 10 30°7	0 6073	P.
31	10	36	20	- 1 56°53	20	11	0	35	47	+ 1 10°6	5	+ 38 34 59°9	0 6646	P.
	11	19	5	- 1 51°22	20	11	0	40	78	+ 1 52°6	5	+ 38 35 41°9	0 6646	P.

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Liverpool Mean Time of Observation.	—*R.A. m s	Apparent R.A. of	No. of Compari- sons ( $\alpha$ ).	Declination of	No. of Compari- sons ( $\delta$ ).	Apparent Declination of	Log Factor of Parallax in (a).	Observer- ver.	Star of Refer- ence.
1894. June 6 10 15 40	+ 1 14°72	Ret.	11 16 59'60	+ 5°20'6	Ret.	+ 40°30'16"	0.6508	P.	x
20 10 22 7	+ 26°29	"	"	+ 3°0'2	"	"	0.5819	P.	...
21 10 40 0	- 5 6 60	"	11 50 29'59	+ 2°42'3	"	+ 42°52'10"	0.6814	P.	y
22 11 16 10	- 1 10'70	"	11 52 31'97	- 6 21'7	"	+ 42°57'7"	0.6784	P.	z
11 35 40	- 1 9'10	"	11 52 33'57	- 6 17'1	"	+ 42°57'12'	0.6820	P.	z
25 10 59 40	- 3 21'79	"	11 58 22'62	- 5 34'4	"	+ 43°9'34'	0.6766	P.	a
"	+ 4 40'07	"	11 58 22'70	+ 6 4'2	"	+ 43°9'33'6	"	P.	z
27 10 55 30	+ 29'10	"	12 2 13'49	+ 0 59'2	"	+ 43°16'7'	0.6773	P.	a
28 10 56 22	+ 2 22'82	"	12 4 7 20	+ 3 51'2	"	+ 43°18'59'7	0.6787	P.	a
29 11 5 32	+ 4 16'78	"	12 6 1'13	+ 6 14'0	"	+ 43°21'22'5	0.6821	P.	a
11 7 0	- 35'75	"	12 6 1'33	- 9 21'2	"	+ 43°21'20'2	0.6825	P.	β
30 10 53 48	+ 1 14'64	"	12 7 51'72	- 6 53'2	"	+ 43°23'48'2	0.6798	P.	β
"	- 4 14'88	"	12 7 51'67	+ 0 42'3	"	+ 43°23'51'5	"	P.	γ

## Notes.

May 4.—Frequently interrupted by passing clouds. The comet was earlier compared with W.B. 652, but the R.A. is very discordant. Probably the difference of declination was too great for a trustworthy observation. The Right Ascension in the Radcliffe Catalogue, 1890, differs, however, some ten seconds from W.B. I have no means of determining whether this be due to an error in either catalogue, or to proper motion in the interval, 1890 November 23. May 7.—Definition very bad; star images blurred. May 18.—Moonlight troublesome. June 6.—The observation not considered satisfactory; sky hazy.

*Mean Places of Stars of Comparison.*

Star's Designation or Authority for Places.	Mean R.A. 1894 <sup>o</sup> .	Corr. to Apparent R.A. s.	Mean Declination 1894 <sup>o</sup> .	Corr. to Apparent δ	Letter of Reference.
Paris Catalogue, No. 10304	8 19 17.98	+ 0.52	- 3 24 26.6	- 2.7	a
Brad. 1197. Berliner Jahrbuch	8 20 21.81	+ 0.52	- 3 33 38.8	- 2.7	b
Glasgow 70, No. 2327, Paris No. 11121	8 57 36.58	+ 0.81	+ 7 14 0.3	- 0.5	c
Paris Catalogue, No. 11477	9 14 1.58	+ 0.96	+ 13 22 11.9	+ 1.1	d
Glasgow 70, No. 2410	9 15 31.33	+ 0.97	+ 13 33 49.3	+ 1.1	e
W.B. (2) IX., No. 450	9 23 32.65	+ 1.04	+ 15 50 5.2	+ 1.6	f
Bonn Zones, Vol. VI. + 20°, No. 2365	9 36 38.83	+ 1.16	+ 20 27 0.6	+ 2.7	g
Paris Cat., No. 11958; Glasgow 70, No. 2524	9 37 26.40	+ 1.18	+ 20 40 39.4	+ 2.7	h
W.B. (2), IX., No. 1217	9 59 28.62	+ 1.35	+ 27 0 19.6	+ 4.1	i
Bonn Zones, Vol. VI. + 27°, No. 1850	10 1 51.03	+ 1.37	+ 27 11 10.1	+ 4.1	j
Paris Catalogue, No. 12473	10 5 34.11	+ 1.40	+ 28 21 59.6	+ 4.3	k
" " 12654	10 14 39.06	+ 1.46	+ 29 28 30.9	+ 4.4	l
Leiden, Ast. Ges. Zones, 287, 288	10 23 21.92	+ 1.53	+ 32 32 54.7	+ 5.1	m
" " " 169, 281	10 26 29.26	+ 1.55	+ 32 30 8.3	+ 5.0	n
Lund, Ast. Ges. Zones, 163	10 37 32.77	+ 1.63	+ 35 3 57.3	+ 5.3	o

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Star's Designation or Author, for Places.	Mean R.A. 1894°.	Apparent R.A.	Corr. to Apparent R.A.	Mean Declination 1894°.	Corr. to Apparent $\delta$	Letter of Reference.
Bonn Zones, Vol. VI. + 35, No. 2174	10 36 3'32	+ 1°62	s	+ 35° 4' 3.8	+ 5°4	p
Lund, Ast. Ges. Zones, 188, 192	10 48 56°92	+ 1°69		+ 36 43 9.4	+ 5°6	q
" " 163, 174, 176	10 48 48°25	+ 1°68		+ 37 19 27.5	+ 5°8	r
" " 195, 198	10 56 14°84	+ 1°72		+ 37 33 7.6	+ 5°6	s
" " 174, 176	10 51 2°86	+ 1°68		+ 37 44 27.9	+ 5°8	t
" " 174, 176	10 53 38°25	+ 1°72		+ 38 13 8.3	+ 5°8	u
Bonn Zones, Vol. VI. + 38°, No. 2210	11 1 0°88	+ 1°74		+ 38 20 27.2	+ 5°7	v
Lund, Ast. Ges. Zones, 174, 176	11 2 30°27	+ 1°73		+ 38 33 43.5	+ 5°8	w
W.B. (2) XI., No. 243	11 15 43°08	+ 1°80		+ 40 24 50.0	+ 5°8	x
" " 1048	11 55 34°35	+ 1°84		+ 42 49 23.0	+ 5°3	y
Bonn Zones, Vol. VI. + 43, No. 2172	11 53 40°85	+ 1°82		+ 43 3 24.1	+ 5°4	z
W.B. (2) XI., No. 1183	12 1 42.60	+ 1°81		+ 43 15 3.2	+ 5.3	a
W.B. (2) XII., No. 95	12 6 35°30	+ 1°78		+ 43 30 36.2	+ 5.2	b
W.B. (2) XII., No. 108	12 12 4°76	+ 1°77		+ 43 23 4.2	+ 5.0	c

E Liverpool Observatory;  
I 1894 November 6.